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ABSTRACT

This study predicts gymnastic performance, arousal, and anxiety measures from past performances. Pulse rate and the Palmar Sweat Index were utilized as indicants of arousal. Anxiety was assessed by means of the State-Trait Anxiety Inventory. Eighteen members of the Ithaca College women's varsity gymnastic team were tested throughout the 1973-74 competitive season. Regression analysis revealed that past performance loaded most heavily in the prediction equation. Arousal and anxiety measures were of relative unimportance in the regression equation. Any attempt to predict gymnastic performance without taking into account past performance would be folly. (Author)

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PREDICTION OF GYMNASTIC PERFORMANCE FROM AROUSAL AND ANXIETY MEASURES

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1. Psychological preparation of the athlete prior to competition has long been a concern of physical educators and coaches. Motivation, stress, anxiety, activation level, and level of arousal have been discussed as significant psychological constructs that either impair or facilitate motor behavior (4, 5, 6, 10). However, few investigations have been concerned with relating different measures of arousal to performance in competitive sport situations (4, 12, 14).

2. The Yerkes-Dodson law, formulated in 1908, posed the following relationship between arousal and motor performance: complex tasks are performed better when one's drive is low and simple tasks are performed better when one's drive is high. The relationship between psychological arousal and subsequent motor performance theoretically takes the form of an inverted-U. As arousal level increases, performance improves up to an optimal point and then deteriorates with further increases in activation. Thus, the level of arousal for optimal performance of one task may not be optimal for other tasks. Gutin (6) classified motor tasks in terms of the degree of inhibition (steadiness) required in the task. Tasks which require the subject to detect and identify many stimuli and then organize

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a response are classified as high in inhibition amount. As the number of stimuli and incorrect responses increase, the task becomes progressively less demanding in inhibition. According to Oxendine (14), distinctions between tasks may be made with reference to three criteria: (1) size of muscles involved, (2) amount of force involved, and (3) magnitude of space in which the movement is performed. In Wilson's gymnastics the four events --balance beam, floor exercise, uneven parallel bars, and vaulting--require the use of different muscle groups, different amounts of space, as well as diverse degrees of inhibition, and therefore should require different levels of arousal for optimal performance.

3. The empirical research (5, 18) lends some credence to the hypothesis that emotions, specifically excitement and arousal, might reasonably affect the outcome of some athletic performances. Knapp (8) found that anxiety was detrimental to the performances of novice collegiate gymnastic competitors but had no effect upon the performances of experienced gymnasts. However, an investigation by Bush (3) noted no relationship between anxiety and levels of competition for Springfield College women's gymnastic team. She suggested that further research should involve less proficient gymnasts and combine physiological as well as psychological measures of anxiety. Additionally, Martens (12) stated that the difficultness of arousal makes it a troublesome construct to measure and that physiological measures should be coupled with behavioral measures in order to ascertain arousal level.

4. Research (2) has indicated that psychological arousal is associated with certain physiological responses in the body. Two major classifications of responses occur: (1) adrenal gland secretions, and (2)

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